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ANALYSIS OF SCROTAL SWELLINGS IN GOVT. RAJAJI HOSPITAL MADURAI

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI

CERTIFICATE

This is to certify that dissertation entitled **"**ANALYSIS OF SCROTAL SWELLINGS IN GOVT.RAJAJI HOSPITAL, MADURAI" Submitted by Dr. K. K. Saravanan to the Tamil Nadu Dr. M.G.R Medical University , Chennai, is in partial fulfillment of the requirement for the award of M.S degree Branch – I (General Surgery) and is a bonafide research work carried out by him under direct supervision and guidance.

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DECLARATION

This is consolidated report on **"ANALYSIS OF SCROTAL SWELLINGS IN GOVT.RAJAJI HOSPITAL MADURAI"** based on 324 cases treated at Govt. Rajaji Hospital, Madurai, during the period June 2004 to September 2006.

This is submitted to the **Tamilnadu Dr. M.G.R. Medical University, Chennai** in partial fulfillment of the rules and regulations for the **M.S.** Degree Examination in General Surgery.

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INTRODUCTION

The scrotum is a sac of skin and involuntary muscles enclosing the testis, epididymis, vas difference and spermatic vessels is a phylognetic sophistication of the genito urinary system. The scrotum functions to provide an apt environment to the testis for optimal spoermatogenisis, which is so important for perpetuation of a race. In other words scrotum is the thermoregulator of spermatogenesis.

The importance of scrotum, its contents and their pathologies can be assumed from it being considered as the tenth compartment of the abdomen. The high incidence of male infertility and other morbidities associated with scrotal pathologies make a detailed study into them and their management worthwile.

Most of the patients with disease of the scrotum and its contents present with swelling of the scrotum and little more few other symptoms and signs. This study intends to look into the various pathologies of the scrotum and its contents, which present as scrotal swelling; and to highlight upon the best way to approach them; in order to restore the anatomy and physiology to the maximum possible level.

AIMS OF STUDY

1. To study the various causes for scrotal swellings and their pattern of incidence in and around Madurai.
2. To study the various clinical presentations of patients with swelling of the scrotum.
3. To analyse the diagnostic and therapeutic modalities adopted in the management of scrotal swellings in our hospital and their outcome.
4. To study the relationship of certain scrotal swelling with male infertility.
5. To highlight on the recent trends in the diagnosis and management of the various scrotal pathologies.

MATERIALS AND METHODS

324 patients with scrotal swelling were admitted in the Department of General surgery, Government Rajaji-Hospital-Madurai Medical College during the period of June-04 to September-06.

Under the guidance of Professor **Dr. S. Vijayalakshmi M.S.,** Detailed clinical evaluation with necessary investigations to identify the cause and its effects were done.

The different methods of available treatment and their outcome were studied. In selected cases pre-operative and postoperative clinical photographs were taken, and subsequent follow up was done.

ANATOMY OF THE SCROTUM

The scrotum is a pendulous bag of skin & fascia designed to lodge the testis. The scrotal wall is composed of

a. Skin
b. Subcutaneous fascia Dartos muscle
c. External spermatic fascia
d. Cremasteric fascia
e. Internal spermatic fascia
f. Tunica vaginalis

BLOOD SUPPLY OF SCROTUM

The scrotum is supplied by

a. Superficial and deep external pudendal branches of femoral artery.
b. Medial and lateral scrotal branches of the internal pudendal artery.
c. Cremasteric artery from inferior epigastric artery

NERVE SUPPLY OF SCROTUM

Ventral part - Ilioinguinal nerve (LI)

Dorsal part - scrotal branches of pudendal nerve (S2,S3)

Perineal branches of posterior cutaneous nerve of thigh.

Cremaster - Genital branch of genitogemoral nerve (L1,L2)

LYMPHATIC DRAINAGE

Lymphatic vessels from the testis run upwards in the spermatic cord and alongside the veins end in the para aortic lymph nodes at the level of the first lumber vertebra (Smith, 1983).

Lymphatic drainage of the scrotum takes place to the inguinal glands.

CONTENTS OF THE SCROTUM

Scrotum contain both the testis and the corresponding spermatic cords.

TESTIS

Testis lies in the scrotum with its long axis oblique and upper pole tilted forward, with vas deferens and epididymis posteriorly. Size is about 5cm x 2.5cm x 3cm.

Testis is coverd by bluish white “Tunica albuginea” which invades the interior to form the mediastinum along its posterior border.

150 to 200 septae divide the interior into lobules, “Rete Testis” from which vasa efferentia enter the head of the epididymis.

EPIDIDYMIS

It is coiled structure containing a single epididymal tubule and attached to the posterolateral surface of each testis. It has a head, body & tail. The canal of epididymis leaves the tail and continues as vas deferens.

SPERMATIC CORD

It is extends from the deep inguinal ring to the posterosuperior border of the testicle, surrounded by three fibrous coats derived from the abdominal wall during the descent of the testis

a. External spermatic fascia

b. Cremastric fascia

c. Intenral spermatic fascia

along with peritoneum and preperitoneal fat contains vas deferens

Spermatic cord contains

a) Vas deference

b) Artery to the vas & testicular artery

c) Pampinifrom plexus of veins & accompanying lymphatics

d) Sympathetic plexus of nerves along the arteries.

TESTICULAR PHYSIOLOGY

The two main function of the testis are to produce spermatozoa and to secrete testosterone. The seminiferous tubules and sertoli cells are responsible for spermatogenesis and the interstital cells or Leydig cells secrete androgen, predominantly testosterone.

Specialised functional complex between sertoli cells are believed to form the bloodtestis barrier. FSH is required to initiate spermatogenesis. Between the seminiferious tubules of the testis lies the interstitial tissue containing blood vessels, lymphatic vessels, Leydig cells, macrophges and supporting cells. The leydig cell produces androgen, mostly testosterone, under the influence of LH.

DIAGNOSITC APPROACH TO SCROTAL SWELLINGS

CLINICAL EXAMINATION

Some clinical findings are important to particular cases such as follows.

Hydrocele	-	Transillumination Positive
	-	Able to get above the swelling
	-	Fluctuation Positive.
Testicular tumour	-	Loss of testicular sensation
Torsion Testis	-	Prenhs sign Positive

GENERAL INVESTIGATIONS

Routine haematologic investigations like Total WBC count, Differential Leucocyte count & ESR will be helpful in diagnosing inflammatory conditions causing scrotl swellings. Eosinophil count will be raised in Filariasis which is a common cause for secondary hydrocele in endemic areas. Night smear examination will reveal microfilariae in cases with filarial aetiology.

Urine examination and urethral discharge analysis will be helpful in probing into the causes of epididymoorchitis. Gram staining and culture will be helpful not only in identifying the causative factor but also in testing specific antbiotic sensitivity.

Serologic studies will be of help in diagnosing specific cause like syphilis, HIV and nonspecific causes like Chlamydial infection.

Accessory investigation like slit smear exam for leprosy, hypersensitive test for tuberculosis & leprosy and pus culture from purulent lesions of the scrotal wall also help in moving towards an appropriate diagnosis.

RADIOLOGICAL INVESTIGATION:-

X- RAY CHEST

Plain x- rays of chest may be helpful in furthur characterising the pathology by the evidence of pulmonary tuberculosis, eosinophilia or secondaries.

ULTRASOUND

USG Examination using high resolution transducers (5 to 7.5Mhz) has now become the investigation of choice in scrotal swellings. Major diagnostic role of ultrasound is to differntiate intra and extra testicular lesions.

The aphorism that focal poorly reflective lesions within the testis is presumed malignant until proved otherwise, hold true. It help us in differentiating simple hydrocele from closely clinically mimicking conditions like cyst of epididymis and testicular tumor. Extreme value of ultrasound lies in diagnosing rupture of testis in case of trauma.

Entire genitourinarty system, Liver and retroperitoneal lymph nodes could be simultaneously evaluated.

DOPPLER

It helps us in differentiating testicular torsion from actue epididymorrchitis by the flow void sequences in the testicular artery (Levy & Pederson et al 1998). The disadvantage of Doppler lies in non visualization of the testicular infarct produced in cases where spontaneous detorsion has occurred now.

LYMPHOGRAPPHY

Bipedal Lymphography is now rarely performed as a staging procedure while it can detect metastasis in normal sized node and the results of lymphography are equivocal to abdominal CT. this invasive procedure is not reliable in detecting recurrence compared to the use of CT and tumor markers.

ODILAG (OPEN DIRECT INGUINAL LYMPHNGIOGRAPHY)

It was preferred over by pedal lymphangiography due to high percentage of false negative results because of poor filling of primary lymph nodes in the later case. On the table ODILAG is helpful in identifying overlooked diseased nodes. This modality is now not in vogue due to the complications like Ethiodol pneumonitis and the advent of CT.

COMPUTED TOMOGRAPHY

CT is the mainstay in the radiological staging of testicular tumors. CT. helps in the identification of nodes between 8 to 10mm size. Other abdominal organs can also be scanned at the same time. An initial staging thoracic CT is indicated as it is the most sensitive methods in detecting pulmonary and

mediastinal metastasis compared to lymphography. CT is a non invasive procedure and also readily identifies the sentinel node and thence picking out early metastasis. The disadvantage being misdiagnosis of unopacified bowel loops, lymphatic vessels, post operative haematomas as lymphadenopathy and thereby overstaging. An added advantage of CT being its guidance in obtaining specimens from retroperitoneal lymph nodes.

MRI

MRI has its role in diagnosing residual tumor from retoperitoneal fibrosis which is very difficult to diagnose by CT alone. The disadvantage of MRI is failure in detecting calcification. The major disadvantage being unavailability, time consumption and cost factor.

RADIONCLEOTIDE SCANNING

99m Technetium pertechnatate scan is a widely practiced, accepted procedure for diagnosing testicular torsion (Heck et al 1974). The disadvantage being cost effectiveness and availability.

RESULTS OF STUDY AND DISCUSSION

During the two years of study 324 cases were admitted in the Department of General surgery, GRH, MMC with swellings of scrotum, of these 239 were primary hydroceles of various types making about 74% of the total. The other common causes we came across in this study were epididymoorchitis and varicocele both accounting for about 14%. The remaining 12% were due to testicular tumor, Fourniers gangrene, epididymal cyst, scrotal abscess, haematoceles, spermatoceles and sebaceous cyst as shown below.

Total number of scrotal swellings admitted during the period of June – 04 to September –06.

1	Primary Hydrocele	239	73.76%
2	Epididymoorchitis	27	8.33%
3	Varicocle	18	5.55%
4	Sebaceous Cyst	12	3.71%
5	Testicular Tumour	11	3.39%
6	Fourniers Gangrene	6	1.85%
7	Epididymal Cyst	4	1.23%
8	Heamatocele	3	0.92%
9	Scrotal Abscess	2	0.61%
10	spermatocele	1	0.30%
11	Torsion testis	1	0.30%

HYDROCELE

Hydrocele is an abnormal collction of serous fluid in the vaginalis of the testis or within some part of processus vaginalis.

It can be Congenital or Acquired and Primary (idiopathic) or secondary.

It is better defined as abnormal collection of serous fluid in tunica vaginalis when no other pathology is made out in the testis or epididymis.

Hydrocele is the commonest of all scrotal swelling that we encountered in our series we came across 239 cases of primary hydrocele and 9 cases of secondary hydrocele.

	No	**Percentage**
Primary	239	96.37%
Secondary	9	3.36%
Total	248	100%

I. Primary Hydrocele

Types of primary hydrocele are

a. Vaginal (Commonest)

b. Infantile

c. Congenital

d. Funicular

e. Encysted hydrocele of the cord

Other rare types are

a. Hydrocele of the hernial sac

b. Hydrocele en bisac

c. Hydrocele of canal of Nuck

AETIOPATHOLOGY AND MANAGEMENT

AETIOLOGY

The various aetiologies proposed are excessive production of fluid, defective absorption, interference with lymphatic drainage and connection with a hernia of the peritoneal cavity.

CLINICAL FEATURES

Usually fluctuant, not reducible and it will be possible to get above the swelling.,

a. VAGINAL HYDROCELE

This is the commonest variety commonly found in the tropical countries and the processus is found obliterated at the level of superior pole of the testis. The fluid is amber coloured and the specific gravity ranges from 1.022 to 1.024. The usual composition is water, inorganic salts and 6% albumin; fibrinogen is present in longstanding cases and cholesterol and tyrosine crystals can be found rarely.

It starts as a painless swelling in a middle aged, man, often unilateral and the testis cannot be felt separately.

Pattern of age distribution in primary vaginal hydrocele

Based on our study the pattern of age distribution in patients with primary vaginal hydrocele is given below. The maximum number of patients presented during 31-40 years of age.

S. No.	Age group	No. of pts	Percentage
1	11-20yrs	17	7.4%
2	21-30 yrs	39	17.2%
3	31-40 yrs	74	32.6%
4	41-50 yrs	49	21.6%
5	51-60 yrs	30	13.2%
6	>60 yrs	18	7.9%
Total		227	100%

b. CONGENITAL HYDROCELE

syn: COMMUNICATING HYDROCELE

It is due to patent processus vaginalis, having direct communication with the peritoneal cavity; but the orifice at the deep inguinal ring is too small to develop hernia. It presents since birth and slowly disappears on lying down position.

Ascities or Ascitic tuberculous peritonitis should be considered if the swellings are bilateral.

c. INFANTILE HYDROCELE

Here the tunica and the processus vaginalis are distended upto the deep inguinal ring but do not communicate with the general peritoneal cavity. It presents as a inguinoscrotal swelling not reducible and there will be no impulse on coughing. It does not disappear on lying down.

d. FUNICULAR HYDROCELE

Rare condition often confused with inguinal hernia. The funicular process is closed just above the tunica vaginalis so that it does not produce a proper scrotal, but an inguinal swelling is produced. Testis can be felt separately.

e. ENCYSTED HYDROCELE OF THE CORD

It occurs when a portion of the funicular process persists and remains patent, shut off from the tunica vaginalis below and the peritoneal cavity above. It starts as an oval cystic swelling in relation to the spermatic cord lying in the inguinal / inguinoscrotal / scrotal region. Testis can be felt separately not reducible and it will be possible to get above the swelling. Traction test is pathognomonic.

f. BILOCULAR HYDROCELE

syn: HYDROCELE EN BISAC

Rare variety where the hydrocele has intercommunicating sacs, one above and one below the neck of the scrotum. The upper sac has no

connection with processus vaginalis and it is infarct the herniated tunica vaginalis. Cross fluctuation between the two sacs of the hydrocele is pathognomonics.

g. HYDROCELE OF THE HERNIAL SAC

Due to stagnation of the fluid within the hernial sac when a tag of omentum blocks the opening of the sac at the deep inguinal ring.

Among the primary hydrocele cases primary vaginal hydrocele was the commonest type in our series. The other types like congenital, infantile and encysted hydrocele of the cord were found rare. No funicular hydrocele case was come across during the period of study.

Type	No.	Percentage
Vaginal	227	94.9%
Encysted	6	2.5%
Congenital	3	1.2%
Infantile	3	1.2%
Total	239	100%

II. SECONDARY HYDROCELE

It is due to the disease of the testis and or the epididymis.

Causes of secondary hydrocele are acute conditions like acute epididymoorchitis, torsion, trauma and chronic conditions like chronic epididymoorchitis, malignant disease of the testis, lymphatic obstruction and syphilitic affection of the testis.

These are usually small and lax and hence testis is easily palpable. Any acutely developing hydrocele may be secondary to testicular tumor.

In our study the major cause of secondary hydrocele is by epididymoorchitis, followed by testicular tumor.

Cause	No.	Percentage
1. epididymoorchitis	7	77.8%
2. Testicular Tumor	2	22.2%

COMPLICATIONS OF HYDROCELE

a. **INFECTION**

b. **ATROPHY OF THE TESTIS**

Dey has observed an arrest of spermatogenesis and consequent testicular atrophy as a result of fluid pressure in the tunica vaginalis.

c. **IMPAIRED SPERMATOGENESIS**

M.C. Dandapat et al have reported that big hydroceles of the tunica vaginalis testis of long duration impair spermatogenesis or fertility.

M.CI.

d. **RUPTURE** – traumatic or spontaneous

e. **HAEMATOCELE –** traumatic or spontaneous

f. **HERNIA OF THE HYDROCELE SAC**

g. **CALCIFICATION OF THE HYDROCELE SAC WALL**

h. **PYOCELE**

i. **CLOTTED HYDROCELE**

Most of the primary hydroceles were simple except for a few which were complicated.

Simple	226	94.56%
Complicated	13	5.44%
Total	239	100%

The commonest complication we came across were pyocele and haematocele. Other complications like calcification of the sac and herniation of the hydrocele sac were rarely met.

Complications	**No.**	**Percentage**
1. Pyocele	6	46.2%
2. Haematocele	5	38.5%
3. Calcified sac	1	7.7&
4. Herination of hydrocele sac	1	7.7%
Total	239	100%

All the hydrocele a patients included in this study had a total and differential count done as a routine investigations. 37 patients were found to have eosinophil count more than 5%.

TREATMENT MODALITIES AVAILABLE FOR HYDROCELE

a. ASPIRATION

It is preferred in older patients who are unfit for surgery. Before aspiration position of the testis should be confirmed and ensured that it is healthy.

Disadvantages of this procedure are it gives only temporary relief and rarely it cause haematoma.

b. SCLEROTHERAPY

The solution which was used in the earlier days is Quinine hydrochloride (4gm) and Urethane (4gm) in water (30ml).

Sclerosants more commonly used now are Sodium tetradecylsulphate, Tetracycline hydrochloride, Minocycline, Ethanolamine oleate and Polidocanol (3%).

After aspirating the fluid sclerosant is injected and the scrotum is supported for some days. If necessary the procedure may be repeated at a later date.

Disadvantaged are pain, recurrence, haematoma and infection.

Various studies have been conducted on sclerosants for hydrocele using various sclerosants which includes phenol (Nash 1984), tetradecyl sulphate (Mecfarlane 1983). Tetracycline (Hu et al, Badenech et al, Bullock et al), Ethanolamine oleate (Hell storm et al) and Polydocand (Fuse et al). Upon the above sclerosants comparative trial by Rencken et al revealed that Tetracycline + Tetradecyl sulphate to be superior in the cure rates (95%), availability and also cost effectiveness.

c. SURGICAL MANAGEMENT

There are two approaches – inguinal and scrotal. Both procedures can be done under LA, SA or GA.

In inguinal approach the sac is delivered through an inguinal incision over superficial inguinal ring.

In the scrotal approach the sac is delivered through vertical paramedian or transverse incision.

If the hydrocele is small and thin walled Jaboulays Procedure or Lords Plication can be done. If the hydrocele is large or the sac is thick walled, excision of the sac is the procedure of choice. If heamatoma formation is expected scrotum should be drained by a CRD. Risk of post operative complications is less after Lord Procedure and it can be done as a out patient procedure. (Singh. Dr et al)

In our 2 years of study 248 surgeries were performed on patients presented with hydrocele. The selection of the patient for the type of surgery was based upon size, thickness of the tunica vaginalis, redundancy of the scrotal skin and also the surgeon who is performing the procedure. Smaller sacs were either everted and plicated and the larger ones were excised. In some cases both partial excision and eversion were performed. Very few patients with increased redundancy of scrotal skin underwent scrotal skin excision and reconstruction following usually excision of sac.

The statistical data of the procedure adopted in our patients are as follows. Surgeries done for bilateral hydrocele are considered as two separate surgeries.

Procedure	**No.**	**Percentage**
1. Eversion	112	45.1%
2. Excision	82	33.0%
3. Partial Excision & Eversion	15	5.9%
4. Lord's plication	27	11.8%
5. Orchidectomy	9	3.6%
6. Herniotomy	3	1.2%
Total	**248**	**100%**

INCISIONS

Vertical para median rapheal incision was the more common incision used in our subjects. Transverse incision was used for small and medium sized hydroceles accounting for about 13% of cases.

Incision	Percentage
1. Vertical	92%
2. Transverse	8%
Total	**100%**

POST OPERATIVE COMPILATIONS

1. **INFECTION**
2. **SCROTAL HEAMATOMA**

Most of the patients had an uneventful post operative period. The commonest complications we encountered were post operative infection and post operative haematoma.

1. Infections	27	10.88%
2. Heamatoma	9	3.62%

COMPARISON OF COMPLICATIONS OF VARIOUS SURGICAL PROCEDURES

SURGICAL PROCEDURE	Total No.	INFECTIONS		HAEMATOMA	
		No	%	No.	%
Excision	82	13	15.8%	6	7.3%
Eversion	112	11	9.8%	2	1.8%
Partial Excision & Eversion	15	2	13.3%	1	6.6%
Lord's Plication	27	1	3.7%	0	0%

OTHER NEW PROCEDURES UNDER TRIAL ARE

a. EVERTED PLICATION (Rohondia OP et al)

It is a combination of plication and eversion. The advantages claimed are need of less time less suture material and less injury to epididymis and testis.

b. ENDOSCOPIC HYDROCELE FULGRATION (Nishiyama et al)

This procedure is under evaluation. Here the partial surface of the sac is completely fulgurated by a resectoscope with a 30 degree lens inserted via a modified laparoscopic trocar inserted into the hydrocele under video monitoring.

c. LAPAROSCOPIC REPAIR OF PAEDIATRIC HYDROCELES (Janetscheck. G et al)

Here the open processus vaginalis is transected using laparoscope.

VARICOCELE

Varicocele is defined as dilated elongated and tortuous pampiniform plexus of veins.

Aetiology

a) Primary or idiopathic

b) Secondary

Left – due to hypernephroma

Right – Tumor thrombus extending upto IVC resulting in block

c) Constitutional

It is more common in left side (98%) when compared to right side (2%). It is usually asymptomatic when small, but causes a heavy, dragging, aching sensation which becomes worse on prolonged standing and exertion. Some present with subfertility and infertility. Any middle aged men with sudden onset of varicocele must be completely investigated for hypernephroma.

On inspection dilated veins can be seen over the scrotum; on palpation the dilated veins will appear like a bag of worms. Cough impulse and thrill will be usually positive. Testis on the affected side is usually small due to atrophy. On lying down primary varicocele empties, whereas it does not happen in case of secondary lesion.

PREDILICTION FOR LEFT SIDE

1. High insertion and increase in length of the left testicular vein.
2. The left testicular vein drains into the left renal vein at right angle.
3. The left suprarenal vein drains into the left renal vein results in release of catecholamines causing vasoconstriction.
4. Compression of left renal vein in between abdominal aorta and superior mesenteric artery.
5. Compression by loaded rectum.
6. Left testicular artery may arch over left renal vein and thus may cause compression over it.

Varicocele accounted for 5.5% of all cases in our series. Majority of them were left sided (80%) and among the 18 cases infertility was reported in only one case.

Left	**Right**
14 (77.8%)	4 (22.2%)

All these cases were subjected to ultrasound examination. Multiple dilated tubular structure suggestive of varicocele were identified in scrotal ultrasound. None of the patients had any associated abdominal pathology.

TREATMENT OF VARICOCELE

CONSERVATIVE

If the varicocele is small scrotal support and reassurance is enough.

SURGICAL

The indication for surgery are severe pain, infertility and for cosmetic purpose. For all cases seminal analysis was done pre operatively. Only one case was found to be infertile.

TYPES OF SURGERY

CLASSICAL

Here a portion of spermatic veins is excised between ligatures. It can be done through inguinal or scrotal route, scrotal approach is not usually preferred as recurrence, bleeding, infection and damage to testicular artery are more common.

PALOMO OPERATION

Here the spermatic vein is approached retroperitoneally and ligated.

All these 11 cases were operated upon. Ligation and excision was the procedure adopted for all these patients.

LAPAROSCOPIC SURGERY

Here the internal spermatic vein is clipped and divided. Laparoscopic varicocelectomy is a simple, safe, effective and minimally invasive procedure and it can be proposed as a viable alternative to open traditional surgical methods. Recurrence rate is very low when compared with traditional surgical methods (Recurrence rate for traditional methods is 1-25%) (Berolli et al). Patient can return to normal activity earlier.

MICROSURGICAL HIGH INGUINAL VARICICOCELECTOMY WITH DELIVERY OF THE TESTIS

In this method the testis is delivered through inguinal route and the spermatic cord is dissected under optical magnification. All external spermatic and gubernacular veins are ligated and testicular artery, lymphatics and vas deferens is identified and preserved.

Advantages of this procedure are no clinical recurrence, no post operative hydrocele formation, increase pregnancy rate and no wound infection (Chaloouthy E et al).

EMBOLISATION

Embolisation of testicular vein at the inguinal canal is performed using either balloons or steel coils.

PERCUTANEOUS SCLEROTHERAPY

It is a simpler technique obliterates the testicular vein by placing the catheter tip at the proximal portion of the testicular vein and injection of sclerosants.

EPIDIDYMOORCHITIS

It refers to inflammation of the epididymis and the testis.

Clinically it is divided into acute and chronic epididymoorchitis; pathologically it is divided into specific and nonspecific epididymoorchitis.

Epididymoorchitis accounted for 8% of the cases in our series. 7 out of 27 patients presented with secondary hydrocele.

Type	**No.**	**Percentage**
1. Specific (TB)	8	29.6%
2. Nonspecific	19	70.4%
Total	27	100%

ACUTE EPIDIDYMOORCHITIS

Initially the infection is confined to the epididymis and later spreads to the body of the testis. Infection can reach the epididymis in the following ways.

As retrograde infection from the urethra, prostate and seminal vesicles; globus minor is affected first. Organisms involved in retrograde infection are E.col, Klebsiella and Gonococcus.

As sexual transmission associated with urethritis; organisms involved are Chlamydia and Gonococcus.

As blood borne infection; globus major is affected first. Organisms responsible are Streptococci, Staphylococci, Proteus and E.coli.

These patients present with severe pain and swelling in the testis and associated constitutional symptoms like fever, malaise and chills. Urinary tract infection symptoms like frequency, urgency, dysuria, pyuria and haematuria may be present. On examination the scrotal wall will be red, edematous, shiny and adherent to the epididymis. Epididymis will be diffusely swollen and tender.

DIFFERENTIAL DIAGNOSIS FOR ACUTE EPIDIDYMOORCHITIS

a. Acute torsion of spermatic cord
b. Acute torsion of hydatid of morgagni and other appendages of testis.
c. Spontaneous haemorrhage of a testicular tumor
d. Trauma to the scrotum
e. Thrombosis of the pampiniform plexus

In our study 11 of the 27 patients with epididymoorchitis made a acute presentation. All the patients were management conservatively. Follow up proved the patients to be symptom free with the return of testis to the normal size showing no residual changes.

Signs & symptoms	No. of pts
Pain	11
Fever	5
Swelling	9
Urinary symptoms	2

TREATMENT OF ACUTE EPIDIDYMOORCHITIS

In children and men over 35 years the infection is mostly due to bacterial urinary tract infection. So the urine should be cultured and appropriate antibiotics should be given for a period of 2-3 weeks.

In young men below 35 years the infection is mostly sexually acquired. SO Gram stain and special culture of urethral secretion should be done and treated with appropriate antibiotics.

If culture is not helpful, serological tests like (IgM and IgG antibodies to Chlamydia) is done and treated with Tetracycline and Doxycyline. Minocycline and Erythromycin can also be used.

Non specific measures are absolute bed rest, plenty of oral fluids, elevation of scrotum and analgesics.

ACUTE EPIDIDYMOORCHITIS OF MUMPS

It occurs in prepubertal boys. It occurs in 20% of males suffering from Mumps as the parotid swelling is waning. It starts as unilateral testicular swelling with severe pain, high fever, malaise and associated with acute hydrocele. There will be no scrotal edema. If there is bilateral affection it can cause infertility. Partial atrophy will cause persistent testicular pain. As the cure is spontaneous symptomatic treatment alone is needed.

Other rare causes of acute epididymoorchitis are Enteroviral infection, Meningocooccal infection, Brucellosis, Typhoid, LGV, Trauma, Exposure to chemicals and Blastomycosis.

CHRONIC EPIDIDYMOORCHITIS

It can be classified into specific and nonspecific epididymoorchitis. Specific infections are of Tuberculous, Syphilitics, Leprous and Viral etiology.

CHRONIC TUBERCULOUS DPIDYMOORCHITIS

Globus of the epididymis is the first part to be affect by retrograde infection from a Tuberculous focus which is usually in the seminal vesicle. Onset of this condition is insidious and it is rarely through a haematogenous route either from a focus in the lungs or from isolated renal tuberculosis.

Patients present with a minimal swelling of the testis and slight aching sensation. In 30% of cases there is an associated secondary hydrocele.

It starts as a firm discrete swelling in the lower pole which becomes firm and craggy in consistency. In the later stages nodules could be appreciated in the body which further softens to become cold abscess and discharging sinus in the posterior aspect of the scrotum. Characteristic beading of the vas deferns due to sub epithelial pearls, thickened seminal vesicles, tender and irregular prostate are the late manifestations of this disease.

TREATMENT

If no significant improvement with antituberculous treatment is made out, epididymoorchidectomy is usually performed.

In our series 8 cases have been reported to be of tuberculous etiology among the 27 epididymoorchitis. 6 cases were clinically diagnosed and trial ATT was given which showed no clinical improvement which further made the patient to undergo low orchidectomy. The remaining 2 patients were misdiagnosed both clinically and sonologically as testicular tumor. Hence high orchidectomy was performed and the biopsy revealed the truth.

SYPHILITIC ORCHITIS

Testis and epididymis are affected both in congenital and acquired syphilis. Invariably the testis being affected first. Chronic draining fistulae are common in untreated conditions.

Manifestation of syphilis are of 3 types.

a. **Bilateral orchitis** – in congenital syphilis
b. **Interstitial fibrosis** – symptomless condition in which the testis of normal size but for the loss of testicular sensation, and is usually bilateral.
c. **Gumma** – This is the commonest type which is always unilateral. It starts as a painless, hard, enlarged testis with loss of testicular sensation. Later the testis softens anteriorly and a gummatous ulcer develops in the anterior aspect of the scrotal wall. Secondary hydrocele is a must in this condition and is to be differentiated from testicular tumor.

LEPROUS ORCHITIS

In case of lepromaous orchitis the testis is usually extensively involved with destruction of seminiferous tubules eventually resulting in testicular atrophy and consequent sterility.

No case of leprous orchitis was reported in this series.

VIRAL ORCHITIS

Usually presents as an acute manifestation and may sometimes persist chronically with reactive secondary hydrocele. The common causative agents being Mumps virus, Influenza, Smallpox, Measles, Varicella, Coxsackie virus and HIV.

TREATMENT

Symptomatic treatment with analgesics and steroids. ACTH is rarely used and is less useful. Sometimes tapping of a tense hydrocele is done to relieve pain but with risk of secondary infection.

CHRONIC NONSPECIFIC EPIDIDYMOORCHITIS (GRANULOMATOUS / AUTOIMMUNE)

It occurs in middle aged men following an acute attack which fails to resolve. If open presents with fever and a moderately tender testicular swelling. This conditions is to be differentiated from tuberculous epididymoorchitis by its larger size and smoothness.

It usually, follows Sarcoidosis, chemical exposure, urethral stricture causing reflux of urine down the vas initiating an autoimmune reaction.

TREATMENT

Epididymoorchidectomy.

POST OPERATIVE EPIDIDYMOORCHITIS

In earlier days post operative epididymoorchitis following trans vesical prostatectomy was frequently encountered. Vasectomy was employed for the above cases to prevent spread of infection which now seldom occurs, after the invention of modern chemotherapeutic agents.

SUB ACUTE EPIDIDYMOORCHITIS (FILARIAL)

If filarial epididymoorochitis the globus major is the first part to be affected followed by testis. In the initial stages the digital fossa between the testis and the epididymis on the lateral aspect is obliterated. Later the testis enlarges and becomes firm with loss of testicular sensation.

No case of the above condition was reported in our series.

Urine culture was done for the clinically suspected 27 patients with epididymoorchitis, 9 of the 27 turned out to be positive. The details of the results are given below.

Organisms grown	**No.**
1. E.Coli	6
2. Klebsiella	3

TREATMENT

A. MEDICAL

- DEC 100 mgm 3 times a day × 2-3 weeks
- Paramelaminyl Phenyl Stilbonate which acts on the infective larvae and the immature adult worms.
- Antibiotics (Aminoglycosides)

B. SURGICAL

Orchidectomy (low)

The patients who were diagnosed clinically as epididymoorchitis were treated conservatively except for 8 cases of tuberculous epididymoorchitis, and an other testicular abscess who underwent low orchidectomy.

1. Conservative 25
2. Orchidectomy 2

TORSION OF THE TESTIS

It is defined as torsion of the cord with characteristic rotation of the testis and an anterior presentation of the testis. Torsion is relatively uncommon in fully descended testis as it is well anchored and can not rotate.

AETIOLOGY

a. Inversion of testis
b. Long mesorchium
c. High inversion of tunica vaginalis
d. Undescended or ectopic tests

e. Voluminous tunica vaginalis

f. Separation of tunica vaginalis from testis

TYPES

A. INTRAVAGINAL (PRE PUBERTAL MALES)

Occurs due to long mesoorchium and torsion occurs within the tunica vaginalis.

B. EXTRAVAGINAL TORSION (NEONATES)

When the cord twists above the mesoorchium the whole tunica rotates resulting in vascular occlusion and further gangrene of testis with in 24 hours. It is unrelated to anomalous suspension of testis.

Intravaginal torsion has a higher incidence when compared with extravaginal torsion (Skogland et al 1970).

Torsion usually follows straining, lifting heavy objects or during coitus due to violent contractions of cremaster. Both the testis rotates in a fashion so as to face the midline. Torsion presents as severe pain in the testis or groin referred to the lower abdomen associated with nausea or vomiting. The scrotum is swollen and edematous within 2 to 3 hours and the testis and epididymis lie is swollen and edematous within 2 to 3 hours and the testis and epididymis lie in a abnormal position in the high or horizontal in addition of positivity of Prenh's sign. Surgical restoration of blood flow within 5 hours salvages the testicular function in 83% of patients (Skogland et al).

TREATMENT

a. Within 3-4 hours of the episode manual derotation should be tried by gentle manipulation.
b. Exploration of testicular torsion – untwisting of the testis, trimming of the excessive tunica vaginalis with fixation of the testis to the lateral wall or high orchidopexy is performed. The same procedure is performed to the opposite side as the predisposing congenital abnormality to this conditions bilateral.
c. If the patient presents after complete jeopardisation of the testicular tissue diagnosed pre or per operatively removal of the infracted testis is done.

TORSION OF TESTICULAR APPENDAGES

The torsion of testicular appendage results in a palpable localized painful lump on the upper pole of the testis (Skogland et al 1970). Transillumination reveals a characteristic "BLUE DOT SIGN" which is the infarcted appendage (Holland et al 1981).

TREATMENT

If the diagnosis is certain conservative management is all sufficient (Holland et al 1987). If any doubt exist exploration followed by excision is advised. In our two years of study one testicular torsion case was reported and which was treated by orchidectomy and contralateral orchidopexy.

HAEMATOCELE

It is defined as haemnorrhagic effusion into the tunica vaginalis, it is broadly classified into recent onset and old haematocele.

A. RECENT HAEMATOCELE

Commonly presents with a history of trauma followed by severe pain, tenderness and absence of transillumination. Other causes being surgical procedures like tapping of hydrocele or following vasectomy. Rarely rumors are said.

TREATMENT

Exploration of tunica with evacuation of clots. If testis is ruptured in a linear fashion careful suturing is advised; for a segmental damage wedge resection is usually employed.

B. BOLD HAEMATOCELE

It is due to slow bleed into the tunica and hence painless. Closely mimics a tumor but can be differentiated by means of testicular sensation.

TREATMENT

It is again surgical exploration and if testis do atrophied low orchidectomy is employed.

RESULTS

Of the 324 subjects included in our study 8 cases were proved to be haematocele. 6 cases of haematocele were due too complication of primary hydrocele.

Among the 8 patients 5 were subjected to low orchiedectomy as the testis were atrophied and the remaining underwent testis preserving procedures.

SPERMATOCELE

It is defined as a retention cyst which arised from vasa efferentia or from the sperm conducting system of the epididymis. It contains fluid of barley water appearance rich in spermatozoa. It presents as a small, painless, soft fluctuant swelling situated at the head of epididymis.

TREATMENT

Smaller ones are self resolving, the larger needs either aspiration or excision. Sclerotherapy with Quindine hydrochloride / Urethane or with Tetradecyle can also be tried.

Only one case was reported in all these two years and was diagnosed pre operatively by ultrasound which showed an anechoic lesion containing turbid fluid. The cyst was excised and the contents proved the earlier diagnosis.

SPERM GRANULOMA

Escape of spermatozoa in the epididymis results in this painful swelling. It is commonly seen after vasectomy.

TREATMENT

Excision

No case was reported in the years of our study

CYST OF EPPIDIDYMIS

Multilocular crystal clear fluid filled cyst representing cystic degeneration of epididymis commonly presents ion the middle aged men. They are thought to be remnants of mesonephric or paramesonephric ducts. The cluster of thin walled cysts resembling bunch of grapes are felt separately from the testis.

TREATMENT

Excision

In our series 4 cases were reported forming 1.2% of the total. All the 4 were treated by excision.

SUBCUTANEOUS EMPHYSEMA –SCROTUM

The above condition results commonly following chest injury. It is due to tracking of air in the subcutaneous tissue of the scrotum.

In our study no case was reported.

SCROTAL ABSCESS

It results due to infection of the scrotal skin as that of any other of the human body. Commonest causative agent is staphylococcus aureus. Diabetics are prone for the above condition.

In our series 2 cases were reported and 1 of them happened to be diabetics. All the cases were treated by incision and drainage and the pus sent for culture showed positively for staphylococcus in both cases.

CARCINOMA SCROTUM

Squamous cell carcinoma of the scrotum usually an occupational hazard takes the form of

Wide excision with en bloc dissection of inguinal nodes.

In our series no case of carcinoma scrotum was reported.

FOURNIERS GANGRENE

Abrupt rapidly progressive gangrenous infection of the genitalia which was earlier thought to be idiopathic is now given a definitive etiology (Gray 1960, Flanigan et al 1978), (Lamb and Juler 1983), (Carol et al 1986) traced the origin of infection from rectum, GUT or the skin and thereby disproved the definition given by Fournier as idiopathic scrotal edema in the year 1883.

The commonest causative organism being Clostridum welchii, haemolytic streptococci, E.Coli, Bacteroides and staphylococcus aureus. The predisposition for patients with diabetes is well documented and the reason behind being diabetic vasculopathy, defective phagocytosis and functional urinary tract obstruction form diabetic neuropathy (Yhornton 1971).

3 of our patients were diabetics and non of our 6 cases had rectal foci of infection. Urine culture revealed positive results in 4 of our 6 patients.

E.coli	**Staph. aureus**
3	1

TREATMENT

The treatment begins with surgical debridement immediately upon diagnosis, with exploration within 24 hours to confirm the arrest of infection. Broad spectrum antibiotics directed at both aerobic and anaerobic bacteria should initiated immediately awaiting culture results. In most cases out standard regime was to start the patient of Triple Antibiotic coverage with Ampicillin, Gentamycin and Metronidazole. Newer Cephalosporins are used based on the investigation results. Despite extensive infection and widespread debridement the redundancy of scrotal skin allows compete or partial reconstruction by delayed closure. Larger or residual defects are managed with skin grafts. The skeletonised testicles following debridement are protected in

thigh pouches on a interim or long term basis. Orchidectomy is restricted to older patients with extensive surrounding tissue damage.

RESULTS

In our series 6 cases of Fourniers gangrene were reported. Among them 4 were managed by secondary suturing, the remaining patients ere benefited with split skin grafts. Despite aggressive treatment morbidity and mortality remain high especially in older patients with rectal foci.

TESTICULAR TUMORS

Testicular tumor gains its importance as the most common tumor in young adult men between ages of 19 and 35 years. Modern chemotherapeutic regimens, meticulous nerve sparing RPLND, advanced sensitive raidioimmunoassay for tumour markers, miraculous development in the imaging field has made us to know about the pathogenesis and outcome of our therapeutic trails. Neoplasms of the testis are always almost malignant, the exception being rare fibromas of the tunica vaginalis and pure ledyig cell tumours.

MALIGNANT TUMOURS

Cancer of the testis comprises morphologicaly and clinically diverse group of neoplasms. The over whelming majority are primary and most of these are germ cell tumours. The management of each neoplasm is dependent on the histology and is influenced by the lymphatic and vascular drainage of the testis.

HISTOLOGICAL CLASSIFICATION

SEMINOMA	40%
TERATOMA	32%
COMBINED SEMINOMA AND TERATOOMA	14%
INTERSTITAL TUMORS	1.5%
LYMPHOMA	7%
OTHER TUMOURS	5.5%

INCIDENCE

About 99% of testicular neoplasms are malignant, and though they make up only about 1 to 2 percentage of malignant tumours in men they are of the commonest forms of cancer in the young males (GLIBERT and HAMILTON).

In our study no particular age group was found to be more prone for testicular malignancy.

The histopathologic types encountered and the age incidence are given below.

TUMOURS	20-29	30-39	40-49	50-59	60-69	70-79	Total	%
SEMINOMA	1	4	1	-	2	1	8	72.7%
TERATOMA	-	-	1	-	-	-	1	9.1%
EMERYONAL CELL Ca	1	-	-	-	-	-	1	9.1%
NON HODGKINS /B-CELL LYMPHOMA	-	-	-	-	-	1	1	9.1%

In our series 11 cases of testicular tumours were reported making about 3.4% of the total. All the tumors were unilateral and most of them were left sided. 9 cases presented as painless testicular swelling and the remaining 2 were associated with testicular pain. Loss of testicular sensation was seen in almost all cases and secondary hydrocele was present in about 2 persons.

SEMINOMA

Seminoma accounts for approximately 50% of all GCT's and most frequently appears in the fourth decade of life. Seminomas are uniform in gross and histologic appearance and are characterized by slow growth and late invasion. Metastaic spread is through the testicular lymphatics and dominates intheiliac, aortic and renal hilar nodes.

The typical or classic form consists of sheets of large cells with abundant cytoplasm and round hyerchromatic nuclei with prominent nucleoli. A lymphocytic infiltrate or granulomatous reaction with giant cells or both is frequently present. In the atypical form lymphocytic infiltration and glaucomatous reactions are absent and necrosis is more common. Spermatocytic Seminoma is a rare histologic varient seen almost exclusively in men above the age of 45. It does not express placental alkaline phosphatase. Metastatic potential is minimal.

NON SEMINOMATOUS GERM CELL TUMOURS

Non Seminomatous histology comprises about 50% of all GCT s and most frequently presents in the third decade of life. Most tumours are mixed consisting of two or more cell types (mostofi).

EMBRYONAL CARCINOMA (MTA)

Embryonal carcinoma is the most undifferentiated cell type. It is usually thought to be the most common testicular tumour of childhood; invasion and metastases occur earlier in the course of the disease. Because of the relatively rapid growth haemorrhage and necrosis are common. Metastasis to the abdominal lymphatics and the lungs may occur as an early event.

CHORIOCARCINOMA (MTT)

It is one of the most malignant tumors known. It consists of both cytotrophoblasats and dyscincytiotrophoblasts. Pure Choriocarcinoma is an extremely rare presentation. It often products human chorionic gonadotrophin. The tumor is extremely rapidly invasive; metastasis may be both blood borne and through lymphatics and has usually occurred by the time of diagnosis. The prognosis for these patients is usually for worse than for patients because of

the advanced stage at the time of diagnosis. Elements of choriocarcinomas are frequently found in mixed tumours.

TERATOMA

Teratoma arises form Totipotent cells in the rete testis and often contsins a variety of cell types of which one or more predominate.

MATURE TERATOMA (TD)

It consists of adult type differentiated elements, but cannot be considered as benign because such growths have metastasis.

IMMATURE TERATOMA

It generally refers to tumour with partial somatic differentiation, similar to that seen in a fetus.

TERATOMA WITH MALIGNANT TRANSFORMATION

It refers to a form of teratoma in which one of its components either immature or mature, develops aggressive growth and historically resembles another malignancy. They usually take the form of sarcomas and less frequency carcinomas.

YOLK SAC TUMOUR

This tumour mimics the yolk sac of the embryo and produces Alpha-fetoproteins. The cells may have a papillary, granular or solid appearance; and may be associated with schiller – duval bodies. Pure yolk sac historically is the most common histology found in childhood GCT.

SERUM TUMOUR MARKES

ALPHA_FETOPROTEIN :

Its production is restricted to Embryonal cell carcinoma and endodermal sinus tumours. In patients with pure Seminoma elevated concentration of this reflects an undifferentiated nonseminomatous element.

HUMAN CHORIONIC GONADOTROPHIN HCG:

Elevated serum concentration can be found in patients with pure Seminoma as well as those with NSGCT.

LACTATE DEHYDROGENASE:

Increase in serum concentration are a reflection of tumour burden, growth rate, proliferation and death.

INITIAL PRESENTATION & MANAGEMENT

SYMPTOMS AND SIGNS

The pathognomonic presentation of a testicular tumour is a painless testicular mass that may range in size from a few mm to several cms. Only a minority of patients presents with painless mass; majority present with more diffuse testicular pain, swelling, hardness or some combination of these findings. Delay in diagnosis caused by their patient or physician related factors or both generally results in higher stage of presentation and presumably lower survival.

In no other disease testicular sensation is lost so early or so completely. Ten percent have a lax secondary hydrocele. Between 1 and 5 percent have gynaecomastia.

Atypical cases may simulate epididymoorchitis.

THE HURRICANE TUMOUR

It is a ferocious malignancy which kills in a matter of weeks.

11 cases of testicular tumours were studied in our series making about 3.4

of the total. The various clinical presentations were as follows:

Symptoms / Sings	**Seminoma**	**Terato Carcinoma**	**Embryonal Cell Ca**	**Lymphoma**	**Total**	**%**
Painless, Heavy Testicular Swelling	8	-	1	-	9	81.8
Painful testicular Swelling	-	1	-	1	2	18.2
Secondary Hydrocele	1	1	-	-	2	18.2
Para aortic Lymphadenopathy	-	-	1	-	1	9.1

Two cases of the above seven presented with secondary hydrocele.

The classical sign of loss of testicular sensation was seen in all the patients.

DIAGNOSIS

A radical inguinal orchidectomy using an inguinal incision with early high ligation of the spermatic cord at the deep inguinal ring, minimizes local tumour recurrence and aberrant lymphatic spread and is the only acceptable therapeutic and diagnostic procedure.

In the rare situation where the diagnosis is in question, then an inguinal incision is required for an open biopsy.

Most of the cases were diagnosed clinically and relevant investigationss were done to rule out other causes and to confirm the diagnosis. USG of testis and abdomen was done for all cases and the findings were as follows.

USG Findings	**Seminoma**	**Terato Ca.**	**Embryional cell Ca.**	**Lymphoma**
Homogenous echoeic mass	6	-	-	-
Mixed echogenic mass	2	1	1	1
Para aortic lymphadennopathy	2	1	1	1

Routine x-ray chest was taken for all cases. Mediastinal metastases were identified for the lymphoma patient.

STAGING

A comprehensive evaluation is necessary to define the extent of disease and to determine the appropriate treatment and should include pathologic examination, determination of serum concentration of AFP and hcG and radiological Studies.

Broadly Stage I disease is confined to the testis; Stage II disease is restricted to the retropertitoneum (subdiaphragmatic) and stage III disease

represents involvement of supradiaphragmatic or other nodal status or visceral disease. Stage IV represents distant metastasis.

STAGING OF TESTICULAR TUMOUR

Most of the tumours analyzed in this series were of stage I. Lympohoma testis was of stage III and the rest were stage II malignancies.

Tumour	**Stage I**	**Stage II**	**Stage III**
Seminoma	7	1	-
Teratocarcinoma	-	1	-
Embryonal Cell Ca.	-	1	-
Lymphoma	-	-	1
Total	7 (63.6%)	3 (27.3%)	1 (9.1%)

Seven of the Seminomas presented with stage I disease and the remaining one seminooma presented with stage II disease. Both Teratoocarcinoma and Embryonal cell Carcinoma presned with stage II Disease, Lymphoma testis was of stage III.

MANAGEMENT

As soon as the diagnosis is arrived high inguinal orchidectomy (chevassou maneuver) was done.

MANAGEMENT AFTER ORCHIDECTOMY

CLINICAL STAGE I DISEASE : SEMINOMA

The treatment options available are radiotherapy and observation.

RADIOTHERAPY

Radiation therapy remains the treatment of choice. Dose is 150 to 180 cGY/day for five sessions per week. Total dose is 2500 to 3000 cGY. The relapse rate is negligible.

OBSERVATION

Since long term follow up in needed observation is not considered routine.

NSGCT

The options available are RPLND, observation and chemotherapy. As there is a predictable change lymphatic metastasis, modified bilateral RPLAND is usually the Conventional method of approach.

STAGE II DISEASE : NSGCT (Low burden tumour)

The standard approach to patient's with clinical stage II A and some II B tumour has been RPLND. Margin of resection should not be compromised in an attempt to maintain ejaculatory Function.

SEMINOMA

Radiotherapy is the treatment of choice for most of the patients in this stage. The radiation portal and fraction is the same except that a boost of approximately 500-700 rads is administered.

MANAGEMENT OF STAGE II & III DISEASE (High tumour Burden)

Early Clinical trials developed regimens such as PVB (**cisplatin, vinblastine + Blemycin)** and VAB – 6 **(cisplatin, Vinblastine, Bleomycin, Dactinomycin + Cyclophosphamide).,** eliminated maintenance therapy and replaced Vinblastine with Etoposide. Adjunctive Survery was shown to be essential for achieving a disease free state. Although most patients were cured, significant adverse events were observed. So good and poor risk allocation algorithms were developed.

GOOD PROGNOSIS GERM CELL TUMOURS

Good risk patients are those with a high likelihood of cure. Randomized trails permit a systemic evaluation of the least toxic maximally efficacious therapy for good risk patients.

POOR RISK GERM CELL TUMOURS

As the optimal CT regimen is yet to be determined, the patients coming under the above group should be managed by clinical trails. IT is done either by substitution or by dose intensification of an already existing one like **Vepeside + Holoxan + Adriablastine.**

ADJUVANT CHEMOTHERAPY (STAGE II)

Adjuvant CT remains a strong consideration in patients when six nodes or more are involved, any node is larger than 2cms or there is extra nodal extension. Two cycles of cisplatin based CT are nearly always effective. Etoposide has replaced vinblastine in adjuvant regiments A recent study suggests that Etoposide plus cisplatin alone is adequate.

MANAGEMENT OF RESIDUAL DISEASE

RETROPERITONEUM:

NSGCT:- There is general agreement over the meet to resect all sites of measurable residual disease. A bilateral RPLND is required for residual NSGCT in retroperitoneum.

SEMINOMA:- observation is the choice of management for residul masses smaller than 3 cms. If more they are managed either by observation or surgical resection and direct immediate therapy.

MANAGEMENT OF RELAPSE AFTER CHEMOTHERAPY

CONVETIONAL DOSE SALVAGE THERAPY

Ifosfamide is combined with cisplatin and Etoposide (VIP) or cisplatin and Vinblastine (Velp) in patients whose disease is resistant to two prior regimens.

HIGH DOSE THERAPY

The drugs used in this regimen are **carboplatin** and **Etoposide** with or without an **oxazophosphorine (Cyclophosphamide or Ifosfamide).**

NEW AGENTS

A number of single agent trails have been conducted against refractory GCT. **Ifosfamide, Paclitaxel** and oral **Etoposide** have demonstrated antitumorous activity. Because **Paclitaxel** is synergistic with Cisplatin and **Oxasophosphorine** in vitre, it is being studied in combination with Cisplatin plus Ifosfamide.

ROLE OF SURGERY

Surgery has curative potential in a highly selective group of patients with increase tumour marker level, even after Salvages CT.

BILATERAL TESTICULAR TUMOURS

The incidence of bilateral testicular carcinoma various between 0.5 to 7%. In general incidence metachronous testicular tumour is 4 times greater than that of synchronous variety (Christopher L. Coogen et al 1998) As there is 500-1000 times increase in risk of acquiring malignancy in the contralateral

testis in a patients with testicular tumour has resulted in performing biopsy of the contralateral testis and prophylactic radiotherapy for the same. Radiotherapy virtually eliminates the possibility of contralateral tumour, despite preserving its hormonal production but eliminates the fertility potential. Treatment is based on pathology and clinical staging.

TESTIS PRESERVING SURGERY

In patients with bilateral testicular germ cell tumors organ sparing surgery represents a new therapeutic approach with endocrinological and psychological advantages. Prerequisites need are the tumour should be organ confined with no infiltration of the rete testis, multiple biopsies of the tumour bed and peripheral parenchyma should be taken, any associated CIS should be treated by radiation therapy and patients must be followed closely (heiden reich – A et al 1997).

LYMPHOMA

Lymphoma is the most common secondary tumour of the testicle and the most frequent testicular neoplasm in men over the age of 50 years. Painless testicular enlargement is common, while bilateral involvement occurs in about third of patients.

Radical Orchidectomy establishes the diagnosis and cures a small subset of patients. Doxorubicin based regimen is used after orchidectomy. Survival is generally poor.

RESULTS

All of our patients were treated surgically with high orchidecotmy, and they had an uneventful stay in the hospital post operatively. All patients with Seminoma were treated by post operative Radiotherapy.

Chemotheraphy with Cisplatin, Vincristine and Bleomycin was instituted for Teratoma and Embryonal cell carcinoma and both of these had 5 cycles each; following which they were lost to follow up.

Doxorubicin based chemotheraphy Cisplatin, Adriamycin, Vincristine and cyslophosphosphamide was started for the 72 years old man with stage III non Hodgkins Lymphoma testis. This patient had one cycle of chemotheraphy and is being followed up.

CONCLUSION

On analyzing 324 cases of Scrotal swelling In GRH, Madurai over a period of 2 years the following characteristics were observed.

1. Primary vaginal hydrocele is the commonest cause for scrotal swellings and they commonly occur in the fourth decade

2. Secondary hydroceles account for a small percentage of the total and most of them were due to non specific epididymorchitis and usually at 30-40 years age group.

3. Post operative complications for hydrocele surgery were more after excision of sac than the other procedures; complications were very low for Lord's plication.

4. Varicoceles often tend to be left sided and their attribution to infertility is low in our series.

5. Non specific epididymoorchitis is the commonest cause for infection of the testis and epididymis.

6. Tuberculosis accounted for most of the cases of specific epidiymoorchitis.

7. Testicular tumors account for about 3.5% of all scrotal swelling and most of them were Semonomas (73%).
8. Detailed history and clinical examination along were diagnostic in most of the cases, other investigations were all complimentary.

9. Testicular Ultrasonography in the diagnosis of Testicular tumor has a high sensitivity but the specificity is low.

10. Public should be made aware of the importance of self examination of the testis which might help in early diagnosis of Testicular tumor.

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PROFORMA

DISSERTATION ON SCROTAL SWELLINGS

(Undescended Testis and Hernia Excluded)

Name	:	I.P. No.:
Age	:	D.O.A. :
Occupation	:	D.O.S. :
Address	:	D.O.D. :
Duration	:	

Onset Acute
Subacute
Chronic

H/O 1. Trauma
2. Fever with Chills
3. Cough with expectoration / COPD /PT
4. Diabetes
5. Associated Medical Diseases if any
6. Pain Mild / Moderate / Severe
7. Exposure History
8. Family History
9. Any other symptoms

GENERAL EXAMINATION

Febrile / Anaemic / Edemafeet / Clubbing / Gynecomastic / Jaundice /

Lymph node

Pulse

BP

LOCAL EXAMINATION - Scrotal Swelling

Side - Size
Skin - Normal / thickened / rugosity

Signs of inflammation

Scrotal edema

Sinus / Ulcer / Redness / Blackening

Foul smell

Upper limit of the swelling

Reducible / Tenderness / Warmth

Skin – prefixed

Sinus - Fixed or not

Number

Anterior / Posterior

Discharge

Testis - Swollen

Normal

Atrophied

Sensation

Lie

If there is swelling

1. Consistency - Cystic / Solid
2. Fluctuation - +ve / -ve
3. Transillumination - +ve / -ve
4. Cough impulse - +ve / -ve
5. Tenderness - +ve / -ve
6. Epididymis - Swollen / Nodules / Number
7. Vas deferens – Nodules - Present / Absent
8. Cremaster - Hypertrophied / Not hypertrophied
9. Any other appearance - Bag of worms
10. RLNS - Inguinal / Iliac / Paraaortic

Abdomen – any mass – paraortic nodes

Liver Spleen

Kidneys Ascites

P / R

RS – Effusion / Fibrosis / Collapse / Normal

CVS –

Virchows node – Palpable / Not

INVESTIGATIONS

Hb% TC DC ESR

Peripheral smear for Mf

Blood Urea

Blood Sugar

VDRL

HIV

Microscopic examination of discharge

Culture

X-ray of Scrotum

X-ray Chest

US Scan

Conservative treatment – specify the drugs and other measures

Pre Op findings

Anaesthesia

Incision

Sac – Normal / Thickened / Calcified

Content - Clear fluid

Altered blood

Blubbery material

Pus

Chyle

Smell

Testis - Normal / Atrophied / Pathological / Colour

If tumor - Cut section

Epididymis - Normal / Nodular

Vas deferens - Normal / Beading if any

Nature of surgery

- Eversion of sac
- Excision of sac
- Plication of sac
- Low Orchidectomy
- High Orchidectoy

Follow up